Space Weather Forecast

Issued on Monday 10 February 2025 at 01:12 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Increasing Chance of Moderate flares. Minor Geomagnetic storms likely throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Low with Common-class flares in the last 24 hours.

Ten active regions remain on the Earth-facing disc. The majority of interest is in the northwest quadrant. The rearmost spot remains the largest and most complex region on the visible disc. These spots continue to slowly decay. The remaining regions on the disc are small and simple. Recent imagery is showing a new sunspot region appearing over the southeastern limb.

No significant Earth directed Coronal Mass Ejections (CMEs) were observed from available imagery.

Solar Wind / Geomagnetic Activity: Solar winds were initially at slow-ambient levels around 350km/s before steadily increasing to reach elevated levels by 09/1800 UTC. The Interplanetary Magnetic Field, was at mostly Moderate levels with a peak to High levels around 09/1100 UTC. The north-south component, was initially moderately positive (northwards) before turning mostly moderately southwards around 08/1300 UTC. Geomagnetic activity was Quiet to start the period, becoming Active later in the UTC day.

Energetic Particles / Solar Radiation: High energy proton flux remained at background levels.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate solar activity, with a slight chance of an isolated strong flare, initially from the cluster of regions in the northwest, soon replaced by further sunspots rotating over the eastern limb.

Solar Wind / Geomagnetic Activity: There remains a slight chance of two glancing coronal mass ejections during Days 1 or 2 (10-11 Feb). Solar winds are likely to be at elevated to strong levels. A subsequent connection to another coronal hole is then forecast to follow from Day 2 (11 Feb) onwards to maintain these enhanced levels.

Unsettled to Active geomagnetic activity with Minor storm intervals likely and a slight chance of Moderate storm intervals. Through the rest of the guidance period activity likely continuing at

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Active to Minor storm levels, with the combined risk of the CME arrival on Days 1 and 2 (10/11 Feb) and a subsequent potential connection to further fast winds from another coronal hole by Day 3 (12 Feb).

Energetic Particles / Solar Radiation: There is a slight chance of energetic particles rising above the S1/Minor radiation storm threshold as the cluster of sunspots in the northwest are now in a good position to connect with Earth, should there be further large flares.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	70	60	70	50
Strong	G3	No	20	5	10	5
Severe	G4	No	5	1	1	0
Extreme	G5	No	1	1	1	0

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	No	40	40	60	70
Very Active	R3-R5 (X Class)	No	5	5	10	20

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Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	**≥ S1**	No	10	10	10	10
Very Active	**≥ S3 ***	No	1	1	1	5
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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